

Electric Vehicles and Charging Strategies

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www.cenex.co.uk



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Independent, not for profit, low carbon technology experts

Cenex Overview

- Not-for-profit independent research and consultancy organisation established in 2005.
- Specialists in low emission vehicles, associated infrastructure, energy systems and community/supply chain development.
- Operate across Europe through collaboration and partnership working.
- Manage the UK's largest low carbon vehicle event (www.cenex-lcv.co.uk).
- Help clients to assess, validate and apply low emissions automotive strategies and technologies.



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Who we work with



Economic development,
business case advice, techno-
market consultancy, due
diligence



Trial management and
implementation support of
Low carbon vehicle technology
and energy infrastructure

Advice and implementation
support for fleets and cities
(e⁻, H₂, CH₄)

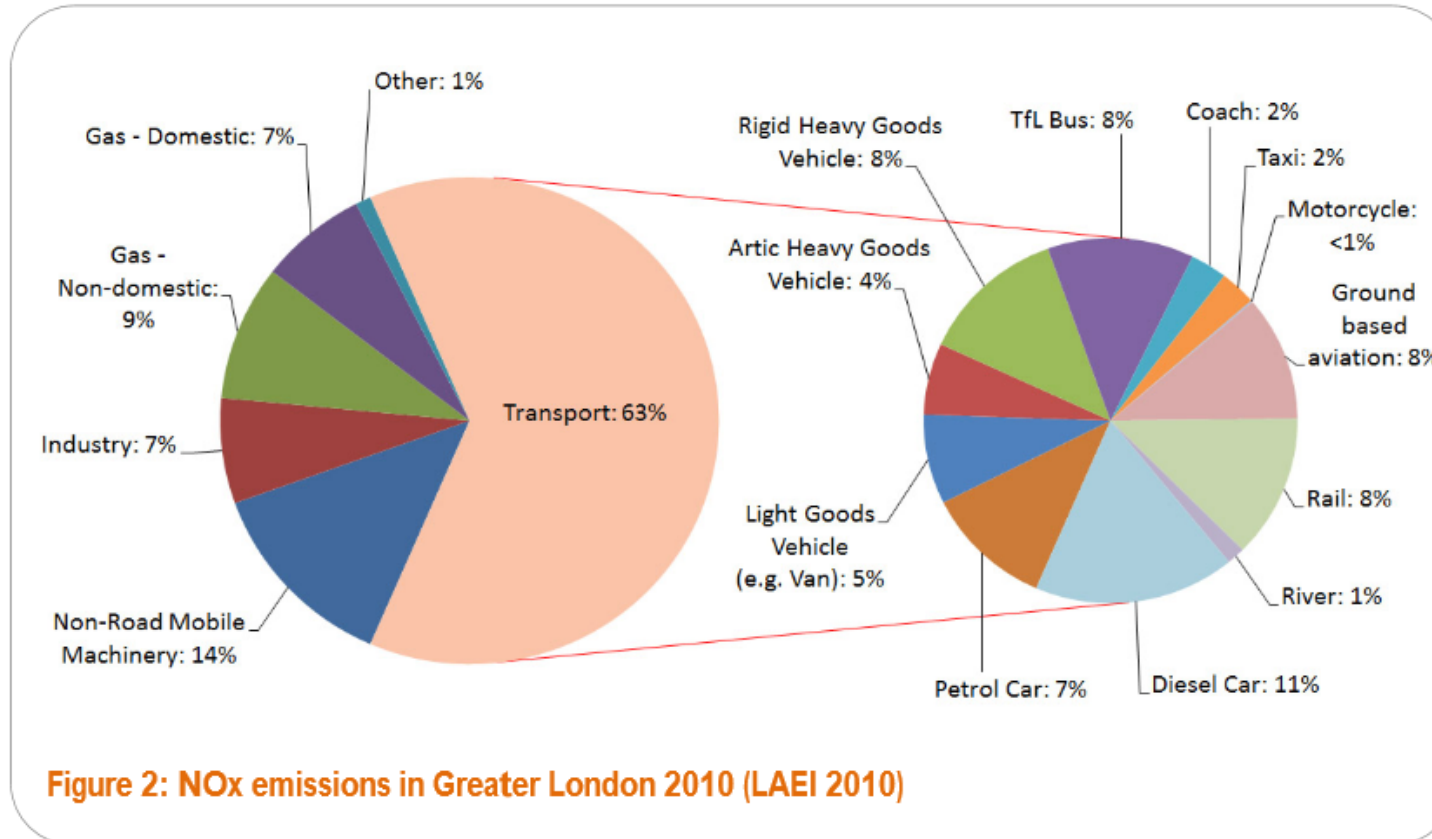


Policy, public affairs and
operational 'project
brokerage' support, project
dissemination including the
LCV event



Transport is the main contributor to poor air quality

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Air Quality



Outdoor air pollution is contributing to about 40,000 early deaths a year in the UK

(Royal Colleges of Physicians and of Paediatrics and Child Health)

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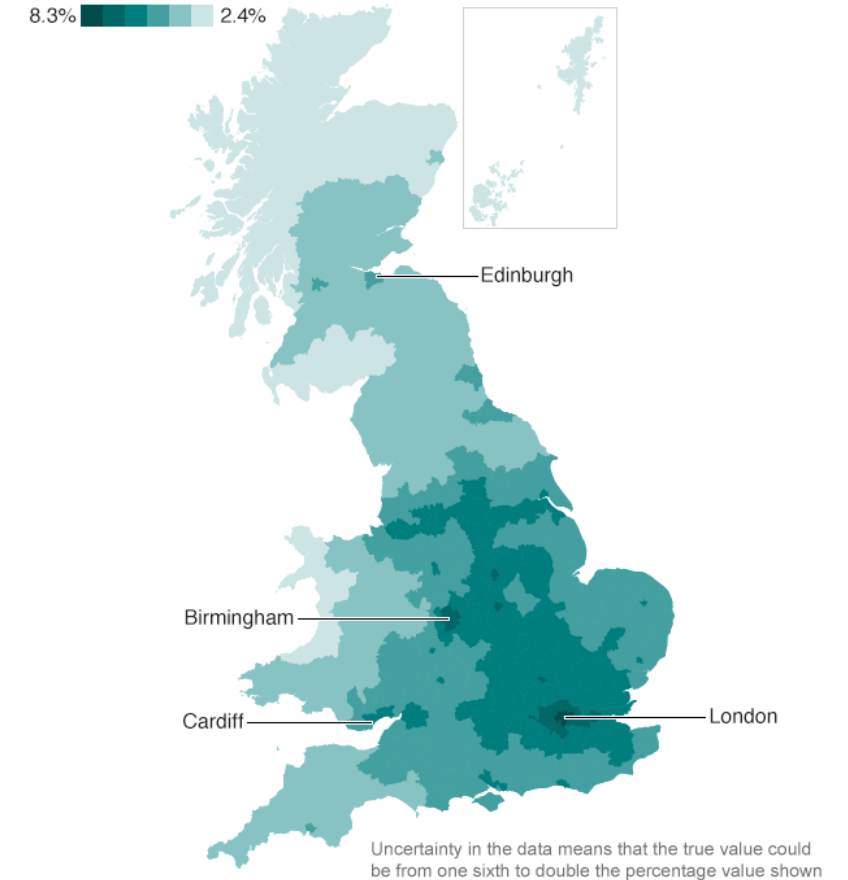


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Air pollution deaths

Estimated percentage of adult deaths attributable to PM 2.5 particulate air pollution
Map data does not include other types of air pollution, eg nitrogen dioxide



Source: Public Health England

BBC

The Response? - Clean Air Zones

Clean Air Zone

Immediate
action to
improve air
quality and
health

Supporting local
growth and
ambition

Accelerating
transition to a
low emission
economy

Access restrictions to encourage cleaner vehicles

Source: UK Government

CLEAN AIR ZONES

PROPOSED

- 1 Newcastle upon Tyne
- 2 Hull
- 3 Liverpool
- 4 Manchester
- 5 Sheffield
- 6 Stoke
- 7 Leicester
- 8 Coventry
- 9 Cardiff
- 10 Bristol

APPROVED

- 11 Leeds
- 12 Derby
- 13 Nottingham
- 14 Birmingham
- 15 London
- 16 Southampton

Source: The Sun

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The Response? – OLEV Grants



Office for
Low Emission
Vehicles

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Charging Equipment Types

AC CONNECTORS



3-PIN

3kW
1-phase



TYPE 1

3-7kW
1-phase



TYPE 2

3-43kW
1/3-
phase



DC CONNECTORS



CHAdeMO

50kW



CCS

50kW



Tesla

50-
120kW



Charging Equipment



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Robin Hood - Integrated multi model E-mobility and Green Energy

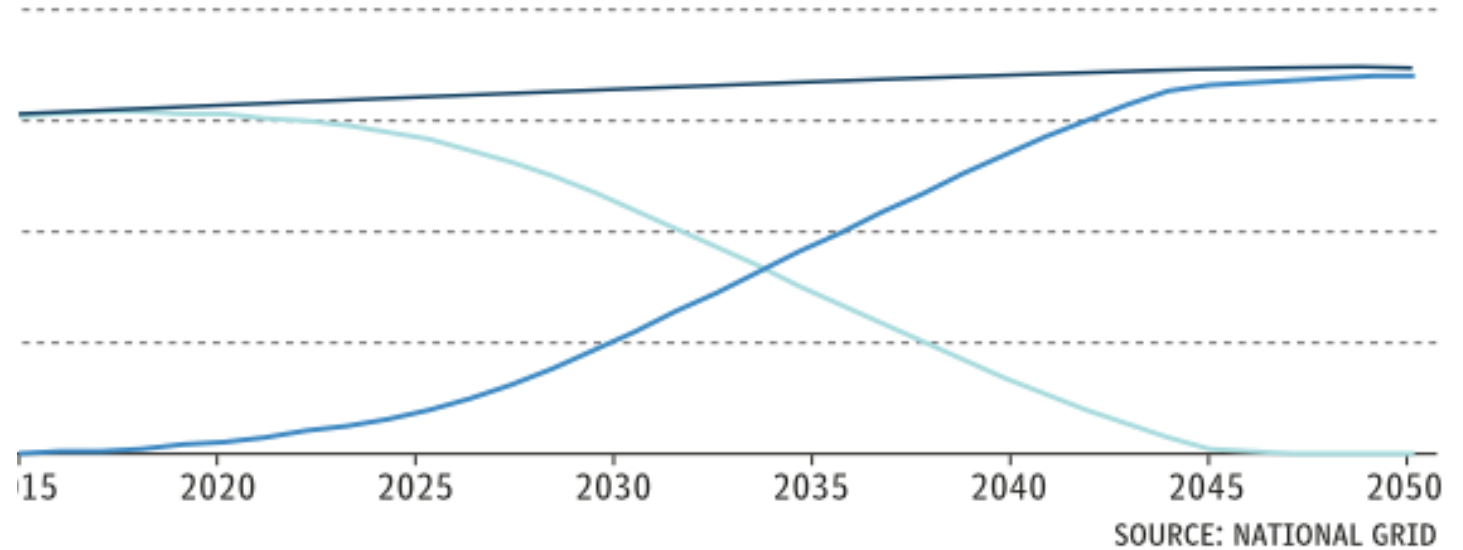


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UK EV Projections

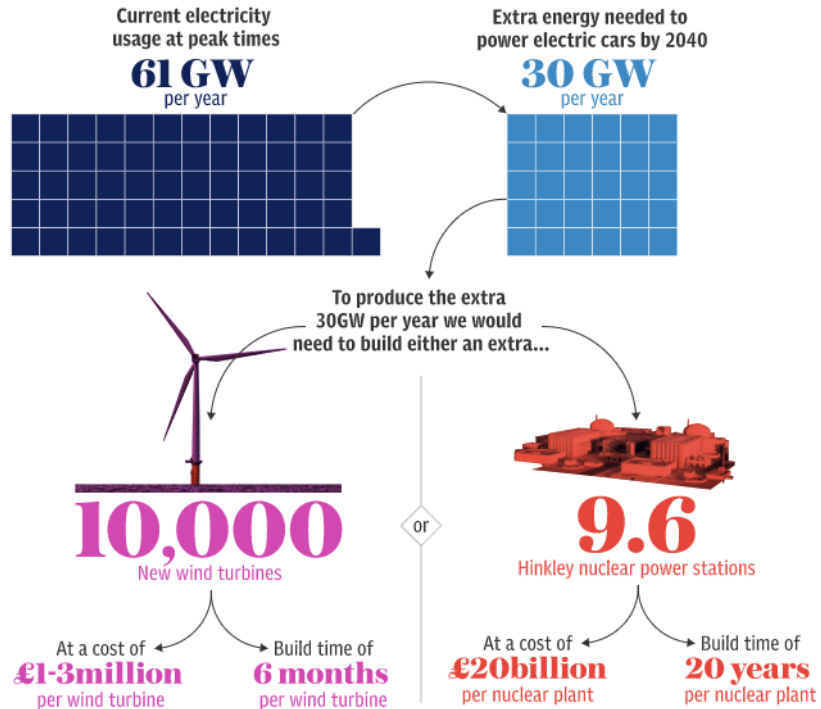
Electric vehicle uptake *Vehicles (millions)*

◆ Total Cars ◆ Petrol and diesel vehicles ◆ Electric vehicles



Are we ready for the 2040 Electric Vehicle target ?

British energy capacity

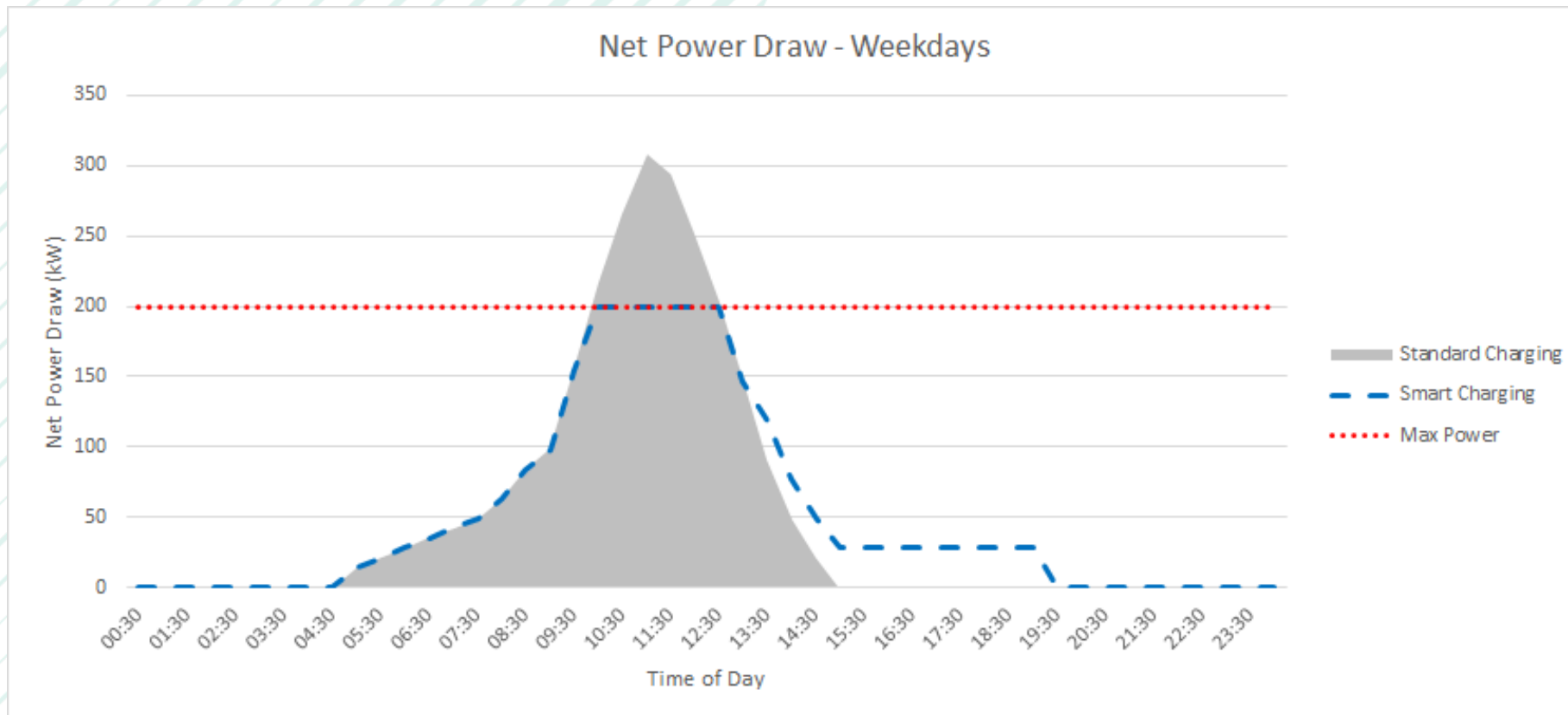


Source: Telegraph

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What is the Solution?

Managed or Smart Charging could help mitigate the large upgrade costs associated with un-managed charging.



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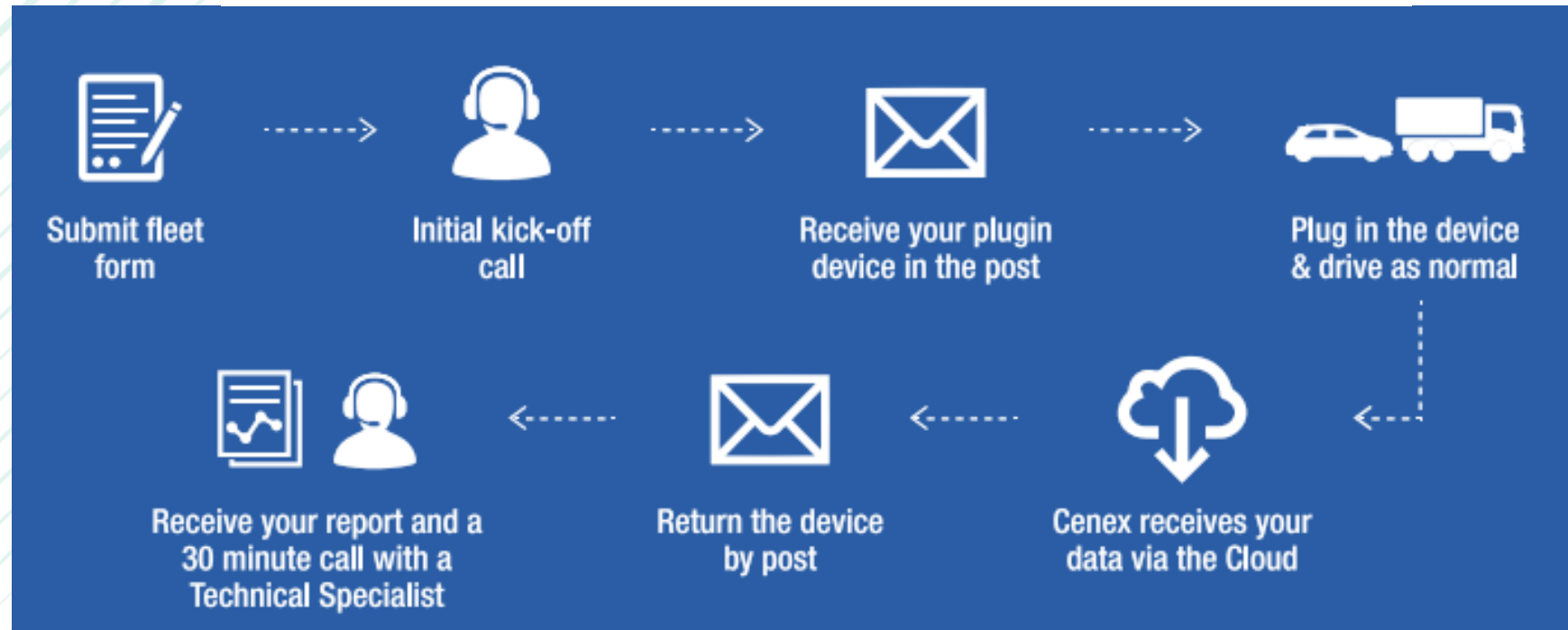
CLEAR Capture



Compare a car or taxi
against EV, PHEV and
REEV



Compare a Van (up to 2.2tonnes
GVW) against an electric model
(or gas or biofuel if required)



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Fleet Carbon Reduction Tool (FCRT)

The Low Emission Van Guide

UPDATED
JULY
2016

Helping van operators
to reduce costs and emissions




LowCVP
Low Carbon Vehicle Partnership
Connect
Collaborate
Influence




Van guide and VC3 tool developed by Cenex for
LowCVP.


Cenex has UK-leading experience of working with the
vehicle operator community in order to promote the
most appropriate and effective use of alternative fuels
and technologies in fleets.

Select Vehicle

 Small Van

 Large Van

Select your driving habits

 Mainly suburban driving

Or choose your own
All drivecycles must add up to 100%

Urban / Inner-City

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Rural / B-road

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Motorway / A-road

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Payload

10% 25% 50% 75% 100%

100kg 200kg 425kg 650kg 850kg

Driving Style

Gentle Steady Normal Keen Aggressive

Select your annual mileage

Select your vehicle ownership duration

Customise Additional Savings, Fuel Costs and Fuel Blends

Diesel Fuel Consumption: 35.6 mpg ?

Show results

<http://vc3.cenex.co.uk/>

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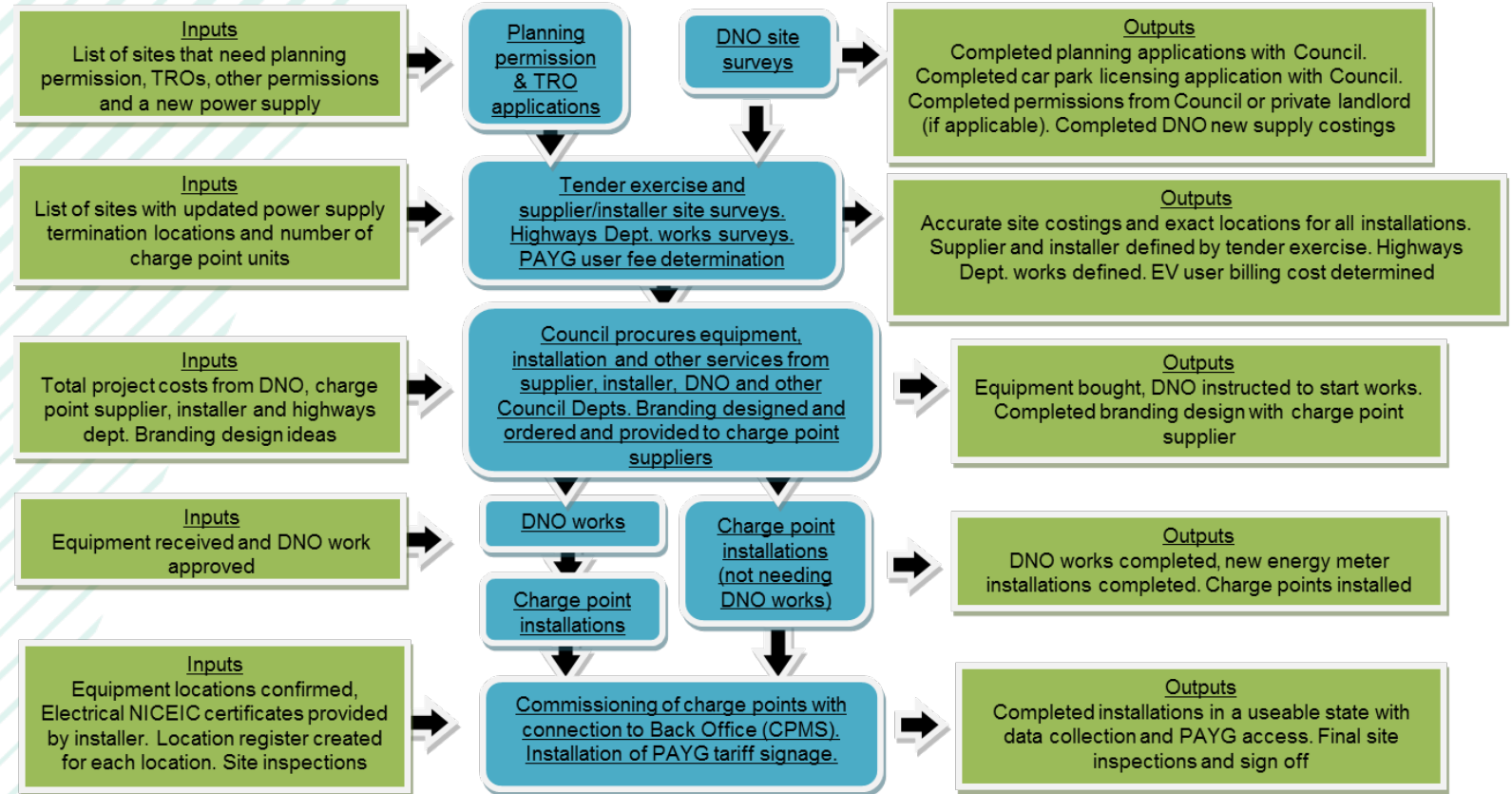
Charging Infrastructure Planning

Making the right connections

General procurement guidance
for electric vehicle charge points



UK ELECTRIC VEHICLE SUPPLY EQUIPMENT ASSOCIATION



Electric Vehicle Analysis Environment (eva^e)

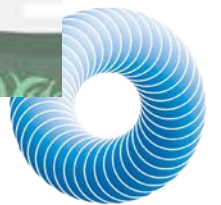


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The screenshot shows the 'eva^e lite' website interface. On the left, a 'Calculation Options' form is visible with the following fields: 'I have a small commercial property' (checked), 'Yearly Demand' (45000 kWh), 'Yes, include solar panels' (checked), '5' (in a dropdown menu), '# V2G Units' (3), and 'V2G unit price: £1,000'. An 'Advanced Options' button is at the bottom of the form. The background features an illustration of a modern building with solar panels on the roof, several white cars parked in front, and two blue EV charging stations. A sign for 'Green Ltd.' is visible on the right. Navigation links for 'About', 'How it works', and 'Get in touch' are at the top right, along with the 'cenex' logo.

- Energy consumption
- Electricity profiles
- Renewables
- Energy plan/scenario

www.evae.cenex.co.uk



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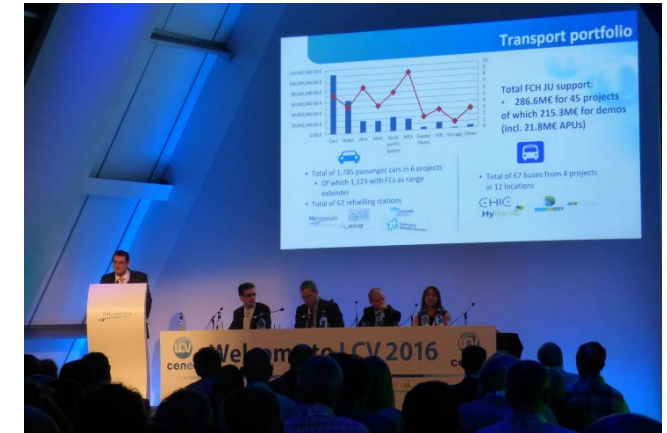
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Technology Showcase



Ride & Drive



Extensive Seminar Programme

- **3,137 visitors**
- **226 exhibiting organisations**
- **1,180 organisations attending**
- **122 vehicles**



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Headline Partner



Thank you for listening

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